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Optimal information acquisition and monetary policy ☆

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Abstract

I study optimal monetary policy with an expectational AS curve and private agents who optimally choose their amount of information pertinent to predicting policy. Shocks with time-varying variance (ARCH) induce interesting information acquisition (IA) dynamics; optimal IA affects optimal policy and vice versa. Under discretion, IA dynamics cause time-varying effectiveness of policy because of the expectational AS curve; policy may be rendered completely ineffective. In policy game equilibrium, a fall in the shock's variance typically induces less IA and raises welfare. In one exceptional case the opposite occurs, a result which does not require implausible unstable equilibria. An agent becoming informed increases the endogenous component of economic volatility; IA therefore has a negative externality. Under commitment policy's effectiveness is again time-varying, but policy is never completely ineffective: commitment enables the central bank to credibly limit policy's volatility; this limits private agents' incentive to become informed, so limits expectation-induced policy neutrality.

JEL classification: E52; E58; D83; D84

Keywords: Information; Expectations; Monetary policy

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1. Introduction

This paper presents optimal monetary policy for a model in which private agents can choose whether to acquire information that helps them predict policy actions. Private sector (PS) information acquisition is important in the model because a monetary policy action has real effects only to the extent that it surprises the PS. This means that as the PS's information acquisition changes over time, the effectiveness of monetary policy also changes, a phenomenon that would appear to an econometrician as an output-inflation tradeoff with a time-varying slope. This topic is important for monetary policy in empirical economies; to the extent that policy neutralization occurs in such economies when private agents become informed, their information acquisition affects the results of monetary policy.[1]

In the model, interesting dynamics of information acquisition are produced by output shocks that have time-varying variance—specifically autoregressive conditional heteroskedasticity, or ARCH. The monetary authority's offsetting of ARCH shocks causes inflation to also exhibit ARCH; furthermore, inflation is the variable the PS might become informed about, but its ARCH behavior implies that becoming informed is worth the cost only in some periods.

Recently, interest in the effects of the PS's information on monetary policy has increased; in particular see Woodford (2002), Ball et al. (2005), and Branch et al. (2006a). This paper advances the literature on this topic in several ways. One way is that PS agents are allowed to have different costs of acquiring information, which seems to be unique in the information strand of the monetary policy literature. Another way is the incorporation of ARCH shocks. The third and most important way is the inclusion of both private agents who optimally choose their information and a monetary authority (MA) that optimally conducts monetary policy. The only other paper with both optimal information acquisition (IA) and an optimizing MA is that of Branch et al. (2006a) (discussed below); the rest of the literature has only one of these features. There is of course a vast literature on optimal monetary policy under exogenous PS information sets. Ball et al. (2005) is part of this literature in that each private agent in their setting has an exogenous probability of information updating. Regarding optimal IA, Evans and Ramey (1992) study a model in which private agents endogenously (optimally in some cases) acquire information under *ad hoc* monetary policy. Hahm (1987) studies the PS's optimal IA but does not describe optimal monetary policy response to output shocks. Neither does Hahm consider private agents with different costs of becoming informed, ARCH shocks, or the differences between discretionary and committed policy, which I do below. Branch et al. (2006a) study optimal monetary policy in a model with endogenous IA but assume all PS agents have the same cost function for IA. They also assume the shocks to which the MA responds are homoskedastic, so that the IA problem is not intrinsically time-varying.

[1] Since Lucas (1972, 1973) formalized the view that only surprise changes in the money supply have real effects, some work has disputed that view. Woodford (2002) rescues the "surprise" strand of the transmission literature from the principal objections which have been raised against it. Those objections are (1) the theoretical objection that monetary aggregates are almost immediately and freely available, so that private agents can not plausibly be assumed to be surprised, and (2) the empirically based objection that the time profile of output's response to a monetary shock is much more spread out than the very short lag with which monetary data are published. Woodford models agents as not observing monetary data in real time with perfect precision because they have finite bandwidth in the information-theoretic sense. For reasonable parameterizations his model implies a time profile of output's response to a monetary shock that agrees well with the data.